



CS Bits & Bytes is a bi-weekly newsletter highlighting innovative computer science research. It is our hope that you will use CS Bits & Bytes to engage in the multi-faceted world of computer science to become not just a user, but a creator of technology. Please visit our website at: <http://www.nsf.gov/cise/csbytes>.

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Scratch

Have you ever wanted to create your own video games or design your own interactive stories?



Download Scratch for free online or watch an intro video.

Scratch (<http://scratch.mit.edu>) is a programming language that you can use to create your own interactive media - stories, games, animations, and simulations. To create programs in Scratch, you simply snap together programming-instruction blocks, just as you would snap together puzzle pieces or LEGO bricks.

Since Scratch's release in May 2007, hundreds of thousands of young people have created millions of projects with Scratch, all around the world, in a variety of settings, including at home, schools, libraries, and museums. Most people who create with Scratch are between the ages of 8 and 16, but people of all ages use it to create interactive media for fun (like creating an interactive greeting card for a friend), work (like quickly prototyping ideas), and study (like as an introduction to computer science for both majors and non-majors at colleges and universities across the country).

**But Scratch is about more than just creating.
It's about sharing!**

In addition to the authoring environment, Scratch is an online community where people can share their projects and exchange feedback with others. Each day, members upload more than 2,500 new Scratch projects to the website - on average, two new projects every minute - with more than 2.5 million projects available.

The collection of projects uploaded is incredibly diverse, and includes interactive newsletters, science simulations, virtual tours, animated dance contests, interactive tutorials, and many others, all programmed with the Scratch environment and its graphical programming blocks. You can also download any project to see how it was made!



Explore more than 2.5 million projects in the Scratch online community.



Scratch's mascot: The Scratch Cat!

Who thinks of this stuff?

Scratch is developed by a team of researchers at the MIT Media Lab in a group called Lifelong Kindergarten, which is led by Professor Mitch Resnick. To create an environment like Scratch, it takes considerable time and effort, as well as different types of expertise. Each team member has a different educational background - including electrical engineering, education, psychology, art, and design - but a common element is computer science. Scratch Team members love to design, build, create, make, play, and help others have creative experiences with computers!

Links:

Watch an overview of Scratch: <http://vimeo.com/29457909>.

Download Scratch for free: http://info.scratch.mit.edu/Scratch_1.4_Download.

Make your first Scratch project: http://info.scratch.mit.edu/Video_Tutorials.

Explore the Scratch online community: <http://scratch.mit.edu/>.

For Educators:

Interested in using Scratch with your students? Explore ScratchEd (<http://scratched.media.mit.edu>) - an online community where more than 5,000 Scratch educators are sharing stories, exchanging resources, conducting discussions, and making connections. You'll find many ideas for getting started with Scratch in the classroom, such as this hands-on Scratch activity from the CSTA K-12 Computer Science Standards and the MIT Scratch Curriculum Guide.

Classroom Activity:

In this pass-it-on Scratch activity, students collaboratively and incrementally construct projects using Scratch by passing the projects from student to student.

Planning:

- Select a theme for the pass-it-on project. Some themes that we have tried before and have been popular include pass-it-on stories and pass-it-on dance parties. The content of pass-it-on projects can also be connected to various curricular areas.
- Decide which Scratch features and computational concepts will be demonstrated in the opening introduction.

With Students:

1. The teacher models the activity by starting a pass-it-on project. For example, the teacher might demonstrate how to start a dance party project, by adding music, a background, and a party-goer. The teacher explains the pass-it-on process and, as an example, makes (or solicits) two or three suggestions for elements that could subsequently be added to the model project (e.g., additional party-goers, more costumes).
2. In pairs, students use a computer to start their pass-it-on projects. They have 15 minutes to work on their projects.
3. After 15 minutes, students rotate to a new computer and continue building the project they find at the new computer. They have 15 minutes to work on their projects.
4. After 15 minutes, students rotate a final time and work on a third project. They have 15 minutes to work on their projects.
5. At the end of this final 15 minutes, students return to their original computer to see how the project they started has evolved.
6. Depending on the number of projects, students can walk around to view all (or some subset) of the other pass-it-on projects.
7. The teacher facilitates a discussion about the concepts and features students learned as they worked on the projects and looked at others' code.

Teacher Links:

Find other activities on ScratchEd: <http://scratched.media.mit.edu/>.

Explore Scratch curriculum: <http://scratched.media.mit.edu/resources/scratch-curriculum-guide-draft>.

Watch webinars for Scratch educators: <http://scratched.media.mit.edu/content/935>.

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